NON-PUBLIC?: N
ACCESSION #: 8910160050
LICENSEE EVENT REPORT (LER)

FACILITY NAME: South Texas, Unit 2 PAGE: 1 OF 3

DOCKET NUMBER: 05000499

TITLE: Reactor Trip Due to a Defective feedwater Pump Speed Controller Card Edge Connector
EVENT DATE: 09/05/89 LER #: 89-021-00 REPORT DATE: 10/05/89

OTHER FACILITIES INVOLVED: DOCKET NO: 05000

OPERATING MODE: 1 POWER LEVEL: 100

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR SECTION:
50.73(a)(2)(iv)

LICENSEE CONTACT FOR THIS LER:
NAME: Charles Ayala TELEPHONE: (512) 972-8628
Supervising Licensing Engineer

COMPONENT FAILURE DESCRIPTION:
CAUSE: B SYSTEM: JK COMPONENT: SC MANUFACTURER: W120
REPORTABLE NPRDS: No

SUPPLEMENTAL REPORT EXPECTED: NO

ABSTRACT:

On September 5, 1989, Unit 2 was in Mode 1 at 100 percent power. At approximately 1607 hours, control room operators observed speed oscillations on the turbine driven Steam Generator Feedwater Pump (SGFP) 21. The operators attempted to regain speed control; however, the pump did not respond and subsequently tripped on overspeed. The resultant loss of steam generator level caused a reactor trip and auxiliary feedwater system actuation. No safety injection actuation occurred. The plant was stabilized in Mode 3. The cause of this event was a defective SGFP 21 speed controller card edge connector which was disturbed by a maintenance technician during troubleshooting of a card associated with SGFP 22 in the same card frame. The defective connector was repaired, the card frame alignment checked, the remaining printed circuit cards and edge connectors were inspected and the contact surfaces were cleaned. The printed circuit cards in the speed controller circuits on Unit 1 were

also inspected and cleaned.

NL.LER89021.U2

END OF ABSTRACT

DESCRIPTION OF EVENT:

On September 5, 1989, Unit 2 was in Mode 1 at 100 percent power. At approximately 1607 hours, control room operators observed speed oscillations on the turbine driven Steam Generator Feedwater Pump (SGFP) 21. The operators attempted to regain speed control; however, the pump did not respond. In anticipation of a feedwater pump trip, the operators began reducing turbine load and reactor power. The pump subsequently tripped on overspeed. The resultant loss of steam generator level caused a reactor trip and auxiliary feedwater actuation. The reactor power at the time of the trip was 84 percent. The turbine tripped on the reactor trip and the feedwater isolation valves closed on low reactor coolant system average temperature. Approximately 90 seconds following the reactor trip, the operators closed the main steam isolation valves to prevent excessive cooldown. No safety injection actuation occurred and the plant was stabilized in Mode 3. The NRC was notified pursuant to 10CFR50.72 at 1833 hours.

Prior to this event, SGFP 22 had exhibited erratic speed control. The speed control circuitry for all three SGFP's is housed in a common card frame. While technicians were troubleshooting the speed control problem, they removed one of the printed circuit cards for SGFP 22. During the card removal, a defective edge connector on a circuit card associated with SGFP 21 caused erratic speed controller output and the erratic pump behavior observed by the operators. Due to the design of the control circuit, loss of continuity of the speed demand signal caused the controller to drive the SGFP governor valves open resulting in an overspeed trip. During post-trip troubleshooting, the effects of disturbances of the card frame on SGFP 21 speed controller output was verified.

The defective card edge connector was repaired, the card frame alignment checked, the remaining printed circuit cards and edge connectors were inspected and the contact surfaces were cleaned. No other defective edge connectors were found. Following these repairs, the erratic controller card behavior could not be duplicated. Unit 2 was restarted on September 6, 1989 at 0454 hours.

CAUSE OF EVENT:

The cause of this event was a defective SGFP speed controller card edge connector which was unknowingly disturbed during troubleshooting of a circuit card for a differential SGFP in the same card frame. This resulted in the SGFP 21 trip.

ANALYSIS OF EVENT:

Reactor trip and Engineered Safety Features actuation is reportable pursuant to 10CFR50.73(a)(2)(iv). The plant was brought to a stable shutdown in Mode 3 with no unexpected post-trip transients. No safety injection actuation occured as a result of this event.

CORRECTIVE ACTION:

The following actions have been taken:

1. The defective Unit 2 card edge connector was repaired, the card frame alignment checked, and remaining printed circuit cards and edge connectors were inspected and contact surfaces cleaned.

2. As a result of this event, the Unit 1 SGFP speed control circuits have been inspected for defective card edge connections and their contact surfaces have been cleaned. No other card edge connector defects were found.

ADDITIONAL INFORMATION:

There have been no previous events reported regarding reactor trips due to defective printed circuit card edge connectors.

A study has been initiated to address reliability of the secondary plant in response to the recent Unit 2 trips. This review will include the SGFP control system.

The defective card edge connector was located in an Electro Hydraulic Controller manufactured by Westinghouse. The card edge connector is style number 393A821003 as shown on Westinghouse bulletin I.L.1150-789.

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ATTACHMENT 1 TO 8910190050 PAGE 1 OF 2

The Light
company
Houston Lighting & Power

P.O. Box 1700 Houston, Texas 77001 (713) 228-9211

October 05, 1989
ST-HL-AE-3250
File No.: G26
10CFR50.73

U. S. Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, DC 20555

South Texas Project Electric Generating Station
Unit 2
Docket No. STN 50-499
Licensee Event Report 89-021
Regarding a Reactor Trip Due to a Defective
Feedwater Pump Speed Controller Card Edge Connector

Pursuant to 10CFR50.73, Houston Lighting & Power (HL&P) submits the attached Licensee Event Report 89-021 regarding a reactor trip due to a defective feedwater pump speed controller card edge connector. This event did not have any adverse impact on the health and safety of the public.

If you should have any questions on this matter, please contact Mr. C. A. Ayala at (512) 972-8628.

R. W. Chewning
Vice President
Nuclear Operations

RWC/BEM/n1

Attachment: LER 89-021, South Texas, Unit 2

NL.LER89021.U2

cc:

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